

# FOREST CONTROL

## by CONTINUOUS INVENTORY

"Today I have grown taller from walking with the trees."

...Karle Wilson

Milwaukee, Wis. January, 1967 No. 70

### PRIMING THE OLD PUMP

Priming the pump is an art which will not long be with us, but thirty years ago, when I was the forest ranger at Cut Foot Sioux in the old Minnesota National Forest, priming the pump was a daily chore. If I wanted fresh, cool water from the depths of the well, I had to prime the pump. The old pump worked fine when it was primed.

Now pumps may obsolesce it is true, but the principle of pump priming never will. It will always be with us.

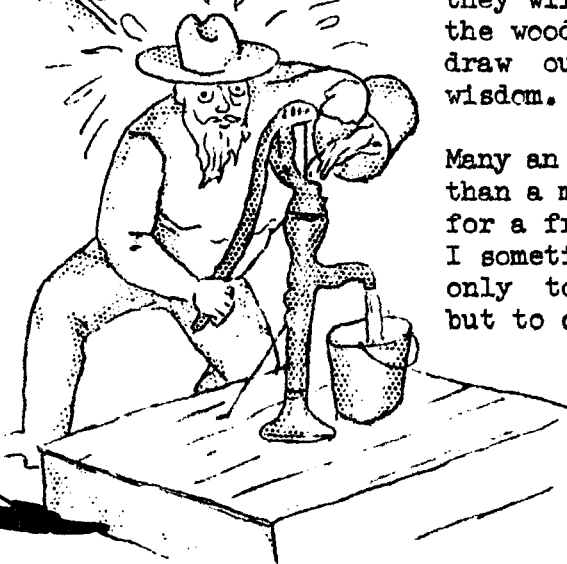
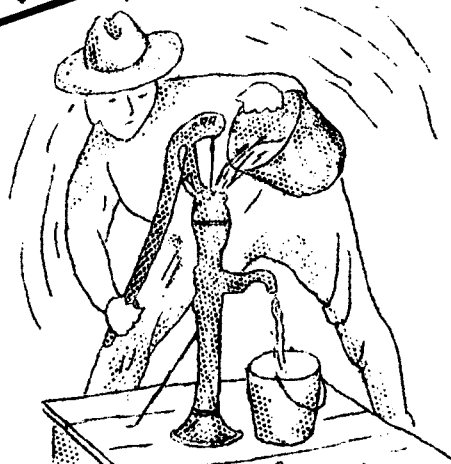
We pour in hard work to draw out worthwhile accomplishment. We prime with study to obtain knowledge, and with understanding to secure good will.

If Foresters are wise, every few years they will prime the cool depths of the woods with CFI so that they may draw out fresh, invigorating woods wisdom.

Many an old pump needs nothing more than a modicum of judicious priming for a fresh resurgence of usefulness. I sometimes think this applies not only to old pumps, and old forests, but to old foresters as well.

FORESTRY SCHOOL LIBRARY

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CAL STOTT



## CFI NEWS ITEMS

### More About the Purdue Forest Management Control Conference

We have received word from Dr. Otis Hall of the Purdue University Forest School that registration for the FOREST MANAGEMENT CONTROL CONFERENCE on February 15 to 17 is completely filled. The Purdue people regret that it is necessary to turn down further applications, but the reserved space in the new Purdue Memorial Center and the desire to keep the group to a size for discussion require that the original limitation to 75 be kept. We are encouraged, however, to see this lively interest in CFI and its application. The complete program of the conference is attached for the review of those interested.

### A Quote From R. Gregory Belcher's News Report

"We have adopted the standard continuous forest inventory of State and Private forestry in Region 9 wholeheartedly and are now engaged in applying it over a five-year cycle to our 25 million acres of leased Crown land and freehold in Canada."

Canadian International Paper Company  
Montreal, Canada

### The Statistical Procedure Leaflets

The second article on statistics is included with this month's CFI newsletter. Subsequent issues will cover actual mathematical problems with which every forester is confronted when doing scientific research, when handling forest inventory records, or when setting up data processing steps for wholesale computing.

William Warren Barton of Region 7 will prepare most of the leaflets. Bill is a capable mathematician and we want him to have full credit for this worthwhile contribution to the simplification of statistical methods and the CFI system.

### We Recant

Dr. Eric Bourdo, Director of the Ford Forestry Center, near L'Anse, Michigan, has pointed out that we must take back our words in the opening paragraph of Newsletter No. 7. All but two of the 140 permanent plots established in the spring of 1938 were relocated, re-established, and remeasured by Phil Thornton, now of Timber Management, while he was engaged as Research Forester at the Ford Forestry Center. The recovery of those plots, long believed lost, was a notable piece of work and Phil is to be commended for the fine work he did.

### We Also Remeasure the Ford Plots

Phil Thornton's remeasurement of the plots in 1958 was based on the minimum 8-inch sawlog top used by the Forest Survey in this region. An analysis of "The Development of Northern Hardwood Stands During the First Twenty-Year Period After Partial Cutting" is being prepared by the Center from these data. We ourselves are also in the process of remeasuring the relocated plots partly to compare growth directly to the 10-inch top diameter which Ford used in 1938 and partly for first-hand observation of growth in the stands with which we worked 22 years ago. With assistance from the Ford Forestry Center, we were able to remeasure 76 plots in a 3-week period last October before cold weather tree shrinkage set in, and the job will be completed before growth starts next spring.

The old Ford Forest of northern hardwoods was heavily selectively cut by the company in 1937. The growth on the residual stand was good, averaging 3 to 4 inches in 22 years. A few of the 2000 or more trees measured by Stott stood almost still in their cellulose tracks for this long period of time but one tree, a white ash, and the greatest grower of them all, added 8.9 inches to its original diameter of 5.3 inches. It looks as though the stand doubled its volume in the growth period but a good share of this wood is ingrowth to the sawlog tree size.

There will be more specific figures on these old CFI plots, set out almost a quarter of a century ago, in subsequent newsletters. In the meantime, we give special honor and extraordinary credit to W. S. Bromley of the American Pulpwood Association and Robert Nelson now in industrial employ, for their careful plot establishment work and records made so many years ago.

### Corn Husker's Lotion Helps

The forester who measures thousands of trees with the diameter tape late in the fall will find that his hands chap, check, crack and weather with the cold. Ray Carlson of Nekoosa Edwards Paper Company has a suggestion which we have tried out with great success. His bottle of Corn Husker's Lotion really helped heal the raw wounds.

### Paints for Tree Numbering

Last summer the O&M Paper Company of Kenora and Fort Frances, Canada, numbered 9,000 trees in 516 CFI plots with Marine White paint. This paint is not as thick as ordinary outside white and the numbers ran a little, but it is expected that the lasting qualities will be improved over ordinary outside white paint. Time will tell.

The Nelson Company of Iron Mountain, Michigan has developed an aero-spot pressure can paint for tree numbering. The numbers have lasted well in test runs in the woods. We will try out this paint in 1960. This paint is not an enamel spray of the kind long on the market, but a special tree numbering paint.

A Warning to the Unwary

There is occasionally a CFI planner who is completely sold on the system of comparable, repetitive inventories, but like most of us, he wants to inject a few of his own ideas into the work plans. Now, this is just fine if the ideas are valid and helpful, but this is not always the case. We ran across one CFI proposal the other day, which is not only of doubtful economy but is also an actual threat to the continuity of the system. The proposal concerns sampling design and plot shifting.

Miltiple plot stations are not necessarily efficient sampling, even with several random starts, when the clustered plots are closely spaced. Any one plot in the cluster has the greatest efficiency, the second plot has a lesser efficiency, and the third, fourth and fifth plots close-spaced about a central point, add little to the statistical accuracy of almost any inventory.

Furthermore, when these five plots are shifted so that they will fall into a particular forest condition class, the validity of the entire project totters in the balance. This is stratification of sample. It not only introduces opportunity for bias but it also eliminates the possibility of determining the area of forest types by proportionate methods. It makes continuity doubtful and fails to properly sample the type margins which comprise a large share of every forest area. It is not the true CFI system.

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WHY IS IT THERE IS NEVER ENOUGH  
TIME TO DO IT RIGHT, BUT THERE  
IS ALWAYS ENOUGH TIME  
TO DO IT OVER AGAIN?

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We Will Soon Be Ready to Help Handle CFI Cases on the 650 Computer

George Semmens dug out his old collegiate beanie last month and set out for the IBM 650 school in Milwaukee, Wis. This special training and the past experience of handling separate segments of the CFI data on the 650 will now enable us to assist companies in this new field of data processing.

With George at the school was Virgil Findell of Timber Management. Virg is taking the same tutelage for the sake of his work in inventory controls for the national forests of this region.

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HERE HE LIES MOULDING,  
HIS DYING WAS HARD--  
THEY SHOT HIM FOR FOLDING  
AN IBM CARD

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## Menominee Indian Mills Remeasures 1200 Permanent Plots

Lee Winner, Forest Manager for Menominee Indian Mills, and Roger Ramsey, his associate, came to Milwaukee last month with two pack sacks filled with data processing cards. The Service Bureau Corporation calculated and compiled sawtimber volume and growth for the entire Reservation, which is about to become Wisconsin's 72nd County.

We were impressed by Winner's forthright appreciation of the CFI system. "Without these 18,000 tree records from our 1200 permanent plots," he told us, "we would be unable to provide the Menominee's with the facts they need when they take over sole management of their forest property in 1960. Neither would we be able to supply the State of Wisconsin with information required by law under new tax legislation. It certainly is a fine thing that Parker Arthur initiated permanent plot work in 1946, that John Libby endorsed its continuation as a primary survey tool in 1949, and that Walt Ridlington included a remeasurement program in the Management Plan of 1954. Without all of this background, we would have been in a pretty helpless position to prepare and revise management plans as quickly as needed for termination of federal guardianship over this property."

## We Participate in the Field of Exploration and Research

It has been the privilege of this division to work this month with Dr. Eric Bourdo and Roger Rogge, his associate at the Ford Forestry Center. We have reviewed their complete research and administrative plan as a forerunner to preparing data processing plans for the forest. Our week together gave us a thorough understanding of the sound planning Eric and Roger are doing to make this the best research center in northern Michigan. We hope ultimately for a machine plan which will hasten the preparation of reports; always a serious and disturbing lag in the best of research organizations.

## The Ontario-Minnesota Pulp and Paper Company, Ltd. Processes a Large CFI Case

Jim Chalmers of O&M and Art Ennis of M&O Paper Companies tackled a large job last month. They worked seven days, including several all-night sessions, to compile their CFI census of the trees in the West Patricia concession of 420,000 acres.

This job in the far back country seemed to be a mighty efficient one to me. Don Start, the forester in charge, deserves the laurels he earned in this mighty marathon of plots and trees, and facts and figures. Of course, without the planes, the outboard motors and the canoes, and without the interest and good will of the cruisers, this field work could not have been done. Then, too, without the capable help of Milt Bylin in charge of the data processing in the Minneapolis office of the M&O Paper Company, we might still be dragging our weary minds through the quaking bogs and sloughs of figures and their calculation.

More than 4 million cords of pulpwood were found on this old forest. It is an interesting sidelight that only 1% of the wood was balsam fir on this area where 50% balsam fir would have been a more normal figure. The now dormant spruce budworm took a dread toll of fir and white spruce on this forest in the past 15 years.

### Herb Stone's Wisconsin Woods Now in Harvest

A moderate selective cut is now being made in Stone's Woods near Holy Hill, Hartford, Wisconsin. Before the cutting began, Semmens and Stott made the 15th annual measurement of the 75 CFI plots established in the fall of 1945. All indicative and dimensional material was re-taken for more than 1500 trees. Semmen's site quality vigor classes were successfully applied to all of the trees in a test run of the rules.

A great deal of good has come out of these plots in Stone's Woods, but the 48 acre tract deserves better care than it gets. We have often wished that we owned this woods so that we could treat it right. It doesn't seem quite fair sometimes that so few foresters can afford both families and forests of their own. I am sure personalized forest management of this kind, unhampered by the need for immediate financial returns, would soon be reflected in improved practices on the large public and industrial forest estates in this country. Industry would do well to give each of their foresters a forty on which they might exercise their silvicultural ingenuity for the production of continuous yields of high value products.

### Background Books

Those who wish to read background material on data processing have a treat in store. Nett and Hetzler have written just such a book. It is called "An Introduction to Electronic Data Processing," and Chapters 1, 2, 3 and 7 are especially pertinent and interesting. The "thinking through" process which is involved in programming and flow charting, can be a capital asset to any organization. In most cases it is something that has never been thoroughly done but is badly needed. With data processing it is a prime essential.

The Free Press of Glencoe, Illinois publishes the 287 page volume, at a cost of \$6.75.

CAL STOTT,  
Forester

## STATISTICAL PROCEDURES LEAFLET NO. 2

### WHAT YOU WORK WITH IN STATISTICS

#### Prerequisites to Statistical Analysis

It is possible to take any set of figures and from them arrive at other figures by calculation. The results of calculation will be meaningful only if the original set of figures represents something which may be logically analyzed. When a statistical analysis is to be made, there must first exist a set of adequate and uniformly distributed sample counts of something in the estimated total of which you are interested.

#### Intrinsic Figures

Although the data in the samples will be blown up to estimate a total, the statistical analysis is concerned only with the samples themselves, the intrinsic figures. Inherent in a set of good samples there are two useful parameters (independent variables used to develop other variables).

1. The individual sample COUNTS.
2. The NUMBER of samples.

#### Derived Figures

From these there are derived two other kinds of figures which will be needed:

3. The ARITHMETIC AVERAGE (or MEAN). This is the sum of all sample counts divided by the number of samples.
4. The DEVIATIONS. These are the differences of each individual sample count from the average count (mean). As they represent amounts greater than or less than the mean, they will be plus or minus in sign.

These are the several kinds of basic figures which you will manipulate through the processes of "statistics" to develop the several numerical descriptions which mathematically state the confidence which may be placed in the arithmetic average and the expanded estimate made from it.

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Forester  
U.S.F.S. Region 7